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Amendments to the Specification:

Please replace the Abstract located on page 24 with the following amended paragraph:

**MULTI-STEP PROCESS FOR FORMING A BARRIER FILM
FOR USE IN COPPER LAYER FORMATION**

ABSTRACT OF THE DISCLOSURE

~~Embodiments of the invention include a method for forming a copper interconnect having a bi-layer copper barrier layer. The method comprises the steps of providing a substrate in a processing chamber, the substrate having a low-K dielectric insulating layer and an opening in the insulating layer. A first barrier layer of tantalum/tantalum nitride is formed on the insulating layer and in the opening. A second barrier layer is formed on the first barrier layer. The second barrier layer consisting of a material selected from the group of palladium, chromium, tantalum, magnesium, and molybdenum. A copper seed layer is formed on the second barrier layer and a bulk copper layer is formed on the seed layer. The substrate is annealed and subject to further processing which can include planarization.~~

~~Other embodiments include providing a substrate in a processing chamber and forming a copper seed layer on the substrate. The seed layer is implanted with barrier materials to form an implanted seed layer followed by bulk copper containing layer formation. The substrate is annealed to form a final barrier layer.~~

~~In a related embodiment the step of forming a seed layer is replaced with the steps of forming a first barrier layer on the substrate and forming a copper seed layer on the first barrier layer. After implantation of barrier material into the seed layer and bulk deposition of copper containing material, the substrate is annealed to form a final barrier layer.~~

~~In yet another related embodiment the step of forming a seed layer is replaced with the steps of forming a first barrier layer on the substrate and forming a second barrier layer on the first layer. A copper seed layer is formed on the second barrier layer. After implantation of barrier material into the seed layer and bulk deposition of copper containing material, the substrate is annealed to form a final barrier layer. Methods for forming robust copper structures include steps for providing a substrate with an insulating layer with openings formed therein. At least two barrier layers are then formed followed by the deposition of a copper seed layer which is annealed. Bulk copper deposition of copper and planarization can follow. In one approach~~

the seed layer is implanted with suitable materials forming an implanted seed layer upon which a bulk layer of conductive material is formed and annealed to form a final barrier layer. In another approach, a barrier layer is formed between two seed layers which forms a base for bulk copper deposition. Another method involves forming a first barrier layer and forming a copper seed layer thereon. The seed layer being implanted with a barrier material (e.g. palladium, chromium, tantalum, magnesium, and molybdenum or other suitable materials) and then bulk deposition of copper-containing material is performed followed by annealing.